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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* KUNIO YAMANE, NOBUHITO HAGIWARA,  
SHOTARO ITAMI, and HIDEKAZU KANEOKA

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Appeal 2011-000213  
Application 10/593,633  
Technology Center 1700

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Before ADRIENE LEPIANE HANLON, JEFFREY T. SMITH, and  
RAE LYNN P. GUEST, *Administrative Patent Judges*.

SMITH, *Administrative Patent Judge*.

DECISION ON APPEAL

## STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134 from the final rejection of claims 1 and 3-9. We have jurisdiction under 35 U.S.C. § 6.<sup>1</sup>

Appellants' claimed invention relates to a polyester resin coating composition for lamp reflectors. Spec. 1. Claim 1 is illustrative:

1. A low specific gravity unsaturated polyester resin composition for lamp reflectors, characterized in that the composition comprises from 40 to 210 parts by weight of an inorganic filler having an average particle size of at least 0.5  $\mu\text{m}$ , from 30 to 160 parts by weight of a hollow filler having a pressure resistance of at least  $2,100 \times 10^4 \text{ N/m}^2$  based on 100 parts by weight of an unsaturated polyester resin and from 35 to 75 parts by weight of a crosslinking agent based on 100 parts by weight of the unsaturated polyester resin and the crosslinking agent, said crosslinking agent comprising:

(A) diallylphthalate monomer or diallylphthalate prepolymer, and

(B) a crosslinking agent selected from the group consisting of a styrene monomer, methyl methacrylate and triallylisocyanurate;

wherein the ratio by weight of the (A) to (B) lies in a range of 5:95 to 25:75, and

wherein the addition ratio by weight of the inorganic filler to the hollow filler lies within a range of 2:8 to 8:2.

Appellants request review of the following rejections (App. Br. 7) from the Examiner's final office action:

1. Claims 1 and 4-9 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Daichou, U.S. Patent Application Publication

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<sup>1</sup>An oral hearing for this appeal was held on October 25, 2011.

No. 2004/0085772 A1 published May 6, 2004, in view of Alger (POLYMER SCIENCE DICTIONARY (2d ed. 1997)).

2. Claim 3 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Daichou in view of Alger and Wada, U.S. Patent No. 4,052,358 issued October 4, 1997.

## OPINION<sup>2</sup>

The dispositive issue for the appealed rejections is: Did the Examiner err in determining that the combination of Daichou and Alger would have suggested to a person of ordinary skill in the art forming a low specific gravity unsaturated polyester resin composition comprising a crosslinking agent which comprises diallyl phthalate and styrene within a ratio by weight of 5:95 to 25:75 as required by the subject matter of independent claim 1?<sup>3</sup>

We answer this question in the negative and AFFIRM.

The Examiner found that Daichou teaches forming a polyester resin composition that can comprise diallyl phthalate and styrene as polymerizable monomers. The Examiner recognized that Daichou failed to provide the ratio of diallyl phthalate and styrene utilized in the composition. (Ans. 4). Daichou discloses that the polymerizable monomers, which include diallyl phthalate and styrene, could be used individually or as mixtures. (Daichou [0029]). The Examiner cited Alger for describing that diallyl phthalate was known to be used in polyester resins to provide products with greater heat

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<sup>2</sup> Appellants did not argue the dependent claims separately in the Brief. Accordingly, the dependent claims stand or fall together with sole independent claim 1.

<sup>3</sup> Appellants rely upon the arguments presented for independent claim 1 in support of the patentability of claim 3. (App. Br. 11). Consequently, we will limit our discussion to claim 1.

resistance. The Examiner concluded that it would have been obvious to a person of ordinary skill in the art to utilize diallyl phthalate and styrene together in forming the polyester resin of Daichou. The Examiner further concluded that a person of ordinary skill in the art would have utilized diallyl phthalate in amounts to provide optimal heat resistance and crosslinking density to the formed polyester resin. (Ans. 5). The Examiner also determined that the desire to increase the crosslink density of the resin would have suggested to a person of ordinary skill in the art forming a low specific gravity unsaturated polyester resin composition comprising a crosslinking agent which comprises diallyl phthalate and styrene within a ratio by weight of 5:95 to 25:75. (*Id.* at 4-5).

Appellants argue that Alger teaches that diallyl phthalate should be utilized to replace styrene in order to provide a polyester resin with greater heat resistance. (App. Br. 10). Thus, Appellants contend that a person of ordinary skill in the art would not have conceived utilizing two crosslinking agents having the claimed specific weight ratio from the teachings of Daichou and Alger in order to improve coating properties of the composition. (*Id.*). Appellants further argue that the working Examples in the Specification are commensurate in scope with the breadth of the claims and demonstrate unexpected results of the presently claimed ratio range. (*Id.* at 11). Appellants also maintain that the Examples provide evidence that there is no predictable relationship between heat resistance of a cured product and the coating property of paint on the cured product. (*Id.*).

We do not find Appellants' arguments persuasive of error in the Examiner's obviousness determination. As set forth above, Daichou discloses that diallyl phthalate and styrene could be used in combination.

This disclosure alone is supportive of the Examiner's obviousness determination. It has long been held obvious to combine two known materials for their known function. *In re Kerkhoven*, 626 F.2d 846, 850 (CCPA 1980). Alger is additional evidence that a person of ordinary skill in the art would have recognized that utilizing diallyl phthalate in polyester resins provide products with greater heat resistance. Consequently we agree with the Examiner's determination that it would have been obvious to a person of ordinary skill in the art to utilize diallyl phthalate and styrene together in forming the polyester resin of Daichou. Regarding the ratio of diallyl phthalate and styrene, we agree with the Examiner that a person of ordinary skill in the art would have been able to determine the appropriate ratios of the monomer components to provide the desired heat resistance and crosslinking density properties to the formed polyester resin. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

Appellants further pointed to the Examples in the Specification to establish evidence of unexpected results for the claimed invention. (App. Br. 10). Although secondary considerations of nonobviousness must be taken into account, they do not necessarily control the obviousness conclusion. *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1372 (Fed. Cir. 2007). Here, Daichou and Alger are evidence that establishes a strong case of obviousness. Further, as correctly stated by the Examiner, the Specification Examples relied on in support of nonobviousness do not establish that the claimed ratio of (A):(B) provides an unexpected improvement in properties. The Examiner properly recognized that the ratio of (A):(B) in comparative Examples 10 and 15 are identical to the ratio of (A):(B) in inventive Examples 18-25, specifically 10:90 (Spec. 19, 20, and

24 (Tables 2, 3, and 6)). Thus, the evidence is insufficient to establish that the ratio of (A):(B) is the basis of the alleged unexpected properties, e.g., sufficient heat resistance (*id.*).

For the foregoing reasons and those set forth in the Answer, based on the totality of the record, we determine that the preponderance of evidence weighs in favor of obviousness, giving due weight to Appellants' arguments. Accordingly, the Examiner's rejections are affirmed.

#### ORDER

The rejections of claims 1 and 3-9 under 35 U.S.C. § 103(a) are affirmed.

#### TIME PERIOD

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1).

#### AFFIRMED

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